

Kodet af JJ d.12.3.57

Indkørt af JJ d.9.10.57

Udgivet d. 1.10.58

$$y = \sin x$$

$$y = \cos x$$

Indhops- adresser	Udhops- adresser	Indgang	Udgang	Max. ordre- antal	Køretid	
					min.	max.
0A8	7A8	$C(AR) = x$	$\cos 2\pi x \rightarrow AR \text{ og } MR$	23	$83\frac{1}{2} \text{ AT}$ ($8\frac{1}{2} \text{ AT}$)	$87\frac{1}{2} \text{ AT}$
1A8	22A8	$(-1 \leq x < 1)$	$\sin 2\pi x \rightarrow AR \text{ og } MR$	22	$82\frac{1}{2} \text{ AT}$ ($7\frac{1}{2} \text{ AT}$)	$86\frac{1}{2} \text{ AT}$
Kodelængde 0 - 40			Undersekvenser Ingen			
Begyndelsesadresse Lige			Arbejdsceller I sekvensen			
Grundparametre Ingen			Perm. konstanter C(2041), C(2043)			
Programparametre Ingen						

Grundlag

Sekvensen benytter følgende approksimationspolynomium:

$$\cos 2\pi x = t + t \sum_{n=0}^6 a_n w^n,$$

$$\text{hvor } w = t^2 - \frac{1}{2}, \quad t = 4(|x| - \frac{1}{2}) - \frac{1}{4},$$

$$\begin{aligned} a_0 &= 0.267\ 162\ 131\ 331 \\ a_1 &= -0.569\ 703\ 680\ 308 \\ a_2 &= 0.072\ 906\ 211\ 195 \\ a_3 &= -0.004\ 369\ 727\ 987 \\ a_4 &= 0.000\ 151\ 654\ 633 \\ a_5 &= -0.000\ 003\ 431\ 829 \\ a_6 &= 0.000\ 000\ 054\ 399 \end{aligned}$$

Endvidere benyttes

$$\sin 2\pi x = \cos 2\pi \left(x - \frac{1}{4}\right)$$

Funktion

Sekvensen beregner de trigonometriske funktioner sinus og cosinus.

Sekvensen arbejder med DASK-tal. De resultater, den giver, er alle numerisk mindre end 1, d.v.s. at sekvensen giver

$$\sin \frac{\pi}{2} = \cos 0 = 1 - 2^{-39}$$

$$\sin \frac{3\pi}{2} = \cos \pi = -1 + 2^{-39}$$

Den maksimale fejl er $6 \cdot 10^{-12}$.

Det bemærkes, at $C(40A8v) = \frac{1}{4}$.

(Til forklaring af sekvensens beregning af t skal det nævnes, at formelen for t tænkes skrevet således:

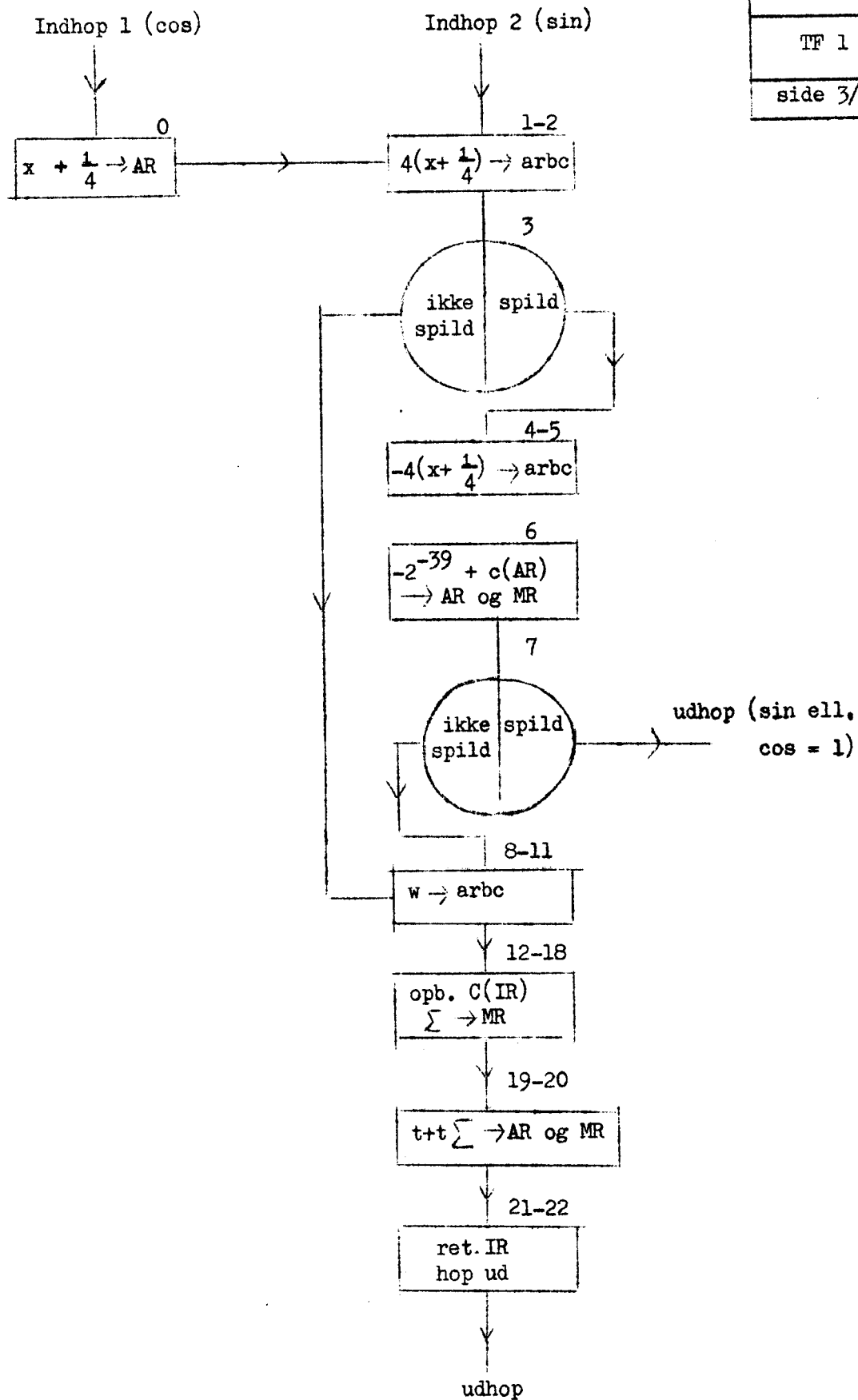
$$\begin{aligned} t &= 1 & (x &= -1) \\ t &= 4\left(-x - \frac{1}{4}\right) = -4\left(x + \frac{1}{4}\right) - 2 & (-1 < x < -\frac{1}{2}) \\ t &= 4\left(x + \frac{1}{4}\right) & (-\frac{1}{2} \leq x < 0) \\ t &= 1 & (x &= 0) \\ t &= 4\left(-x + \frac{1}{4}\right) = -4\left(x - \frac{1}{4}\right) + 2 & (0 < x < \frac{1}{2}) \\ t &= 4\left(x - \frac{1}{4}\right) = 4\left(x - \frac{1}{4}\right) - 4 & (\frac{1}{2} \leq x < 1) \end{aligned}$$

SEKVENSBETEGNELSE

TF 1

side 2/5

Rutediagram



SEKVENSBETEGNELSE
TF 1
side 3/5

Kode

cos indhop

sin indhop

udhop

(13)

udhop

0	40 A8 20	$x + \frac{1}{4} \rightarrow \text{AR}$
1	2 A 0C	$\left. \begin{array}{l} 4(x + \frac{1}{4}) \rightarrow \text{arbc} \end{array} \right\}$
2	36 A8 08	
8 ← 3	8 A8 52	hop, hvis $\begin{array}{l} -\frac{1}{2} \leq x < 0, \\ \frac{1}{2} \leq x < 1 \end{array}$
4	36 A8 41	$\left. \begin{array}{l} -4(x + \frac{1}{4}) \rightarrow \text{arbc} \end{array} \right\}$
5	36 A8 08	
6	2041 A 05	$-2^{-39} + C(\text{AR}) \rightarrow \text{AR og MR}$
7	1 D 12	hop ud, hvis sin ell. cos = 1
3 → 8	36 A8 44	$\left. \begin{array}{l} t^2 \rightarrow \text{AR} \end{array} \right\}$
9	36 A8 0A	
10	2043 A 21	$\left. \begin{array}{l} w = t^2 - \frac{1}{2} \rightarrow \text{arbc} \end{array} \right\}$
11	38 A8 08	
12	23 A8 44	$a_6 \rightarrow \text{MR}$
13	21 A8 74	opbevar C(IRD)
14	2036 A 75	$-12 \rightarrow \text{IRD} \quad (0 \Rightarrow j)$
18 → 15	2 D 75	$2 + C(\text{IRD}) \rightarrow \text{IRD} \quad (j+1 \Rightarrow j)$
16	38 A8 0A	$\left. \begin{array}{l} \sum_{n=0}^j a_{6-n} w^{j-n} \rightarrow \text{MR} \end{array} \right\}$
17	34 D8 04	
15 ← 18	15 A8 73	hop, hvis $j < 6$
19	36 A8 0A	$\left. \begin{array}{l} t+t \rightarrow \text{AR og MR} \end{array} \right\}$
20	36 A8 04	
21	(0) A 75	retabler IRD
22	1 D 10	hop ud
23	B 074D2	a_6
24	B FFFFE	$\left. \begin{array}{l} a_5 \end{array} \right\}$
25	B 33634	
26	B 0004F	$\left. \begin{array}{l} a_4 \end{array} \right\}$
27	B 82BD8	
28	B FF70D	$\left. \begin{array}{l} a_3 \end{array} \right\}$
29	B 0109A	
30	B 0954F	$\left. \begin{array}{l} a_2 \end{array} \right\}$
31	B DA061	
32	B B713F	$\left. \begin{array}{l} a_1 \end{array} \right\}$
33	B 32655	

SEKVENSBETEGNELSE
TF 1
side 4/5

Kode

34	B	22325	}	a ₀
35	B	E6466		
36	A	}	arbc	
37	A			
38	A			
39	A			
40	B	20000		$\frac{1}{4}$

SEKVENSS- BETEGNELSE
TF 1
side 5/5